

Case No.: KMG2010-US1

What is claimed is:

1. A method for making a liner joint of a refractory, corrosion-resistant and/or abrasion-resistant lining, comprising the steps of:

5 providing a first substantially cylindrical structure of the liner material having an inside surface and an inside diameter;

providing a second substantially cylindrical structure of the liner material having a first end, having an inside diameter smaller than the inside diameter of the first structure, and having an outside diameter;

10 creating a cavity in the first structure having a diameter equal to or larger than the outside diameter of the second structure;

shaping the first end of the second structure to be substantially identical to the shape of the created cavity; and

inserting the shaped first end of the second structure into the created cavity of the first structure.

15 2. A method according to Claim 1, wherein the created cavity is off-center such that the inserting step forms a tangential inlet or tangential outlet with respect to a flow of fluids in the first structure.

3. A method for making a liner joint of a refractory, corrosion-resistant and/or abrasion-resistant lining, comprising the steps of:

20 providing a first substantially cylindrical structure of the liner material having an inside surface and an inside diameter;

providing second and third substantially cylindrical structures of the liner material, each structure having a first end, an inside diameter smaller than the inside diameter of the first structure and an outside diameter;

25 creating two cavities in the first structure, each created cavity having a diameter equal to or larger than the outside diameter of the second structure;

shaping the first ends of the second and third structures to be substantially identical to the shapes of the created cavities; and

inserting each shaped first end into a created cavity.

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4. A method according to Claim 3, wherein the created cavities are off-center such that the inserting step forms a tangential inlet and a tangential outlet with respect to a flow of fluids in the first structure.

5. A lined pipe or vessel, including:

- 5 a) a liner joint of a refractory, corrosion-resistant and/or abrasion-resistant material, which joint comprises
- a substantially cylindrical body section having an inside diameter, and
- a tangential inlet or tangential outlet inserted into a cavity in the body section and having an inside diameter smaller than the body section's inside diameter;
- 10 and
- b) a pipe or vessel in which the liner joint is placed,
- characterized in that neither the body section nor the tangential inlet or outlet are joined to the pipe.

6. A lined pipe or vessel, including:

- 15 a) a liner joint of a refractory, corrosion-resistant and/or abrasion-resistant material, which joint comprises:
- a substantially cylindrical body section having an inside diameter,
- a tangential inlet inserted into a first cavity in the body section and having an inside diameter smaller than the body's inside diameter, and
- 20 a tangential outlet inserted into a second cavity in the body section and having an inside diameter smaller than the body's inside diameter; and
- b) a pipe or vessel in which the liner joint is placed,
- characterized in that none of the body section, tangential inlet and tangential outlet are joined to the pipe.